

Unit Planning Guide: Grade 4 Unit 4 of 8

Unit Title: Introduction to Fractions	Pacing (Duration of Unit): 5 weeks
Grade: 4	Buffer Day(s):

Desired Results

Transfer Goals

Students will be able to independently use their learning to:

- **Make sense of problems and persevere in solving them.**
- Reason abstractly and quantitatively.
- Construct viable arguments and critique the reasoning of others.
- **Model with mathematics.**
- Use appropriate tools strategically.
- Attend to precision.
- **Look for and make use of structure.**
- Look for and express regularity in repeated reasoning.

Established Goals (2011 MA Curriculum Frameworks Standards Incorporating the Common Core State Standards)

Standards (Priority Standards in bold):

- **4.NF.1** Explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models, with attention to how the numbers and sizes of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.
- **4.NF.2** Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as $1/2$. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual fraction model.
- **4.NF.3.** Understand a fraction a/b with $a > 1$ as a sum of fractions $1/b$.
 - a. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.

WIDA for English Language Learners

Standard 1: ELLs **communicate** for **Social** and **Instructional** purposes within the school setting

Standard 3: ELLs **communicate** information, ideas and concepts necessary for academic success in the content area of **Mathematics**

In the lesson planning stage, teachers will need to differentiate lessons for ELLs. In order to accomplish this they will need:
1.) this curriculum map, 2.) a list of their

<p>b. Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model. <i>Examples: $\frac{3}{8} = \frac{1}{8} + \frac{1}{8} + \frac{1}{8}$; $\frac{3}{8} = \frac{1}{8} + \frac{2}{8}$; $\frac{21}{8} = 1 + 1 + \frac{1}{8} = \frac{8}{8} + \frac{8}{8} + \frac{1}{8}$.</i></p> <p>c. Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction.</p> <p>d. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.</p> <ul style="list-style-type: none"> • 4.MD.4 Make a line plot to display a data set of measurements in fractions of a unit ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$). Solve problems involving addition and subtraction of fractions by using information presented in line plots. <i>For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.</i> 	<p>ELLs and their proficiency levels, and 3.) appropriate language function expectations and scaffolds or supports.</p>
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<p align="center">Meaning (*Mostly assessed through Performance Tasks/Assessments)</p>

<p>Big Ideas: (Statements and concepts written in teacher friendly language which reflect the important [but not obvious] generalizations we want students to be able to arrive at. These are used by the teacher to focus daily instruction.)</p> <ul style="list-style-type: none"> • Equivalent fractions represent equal areas of a whole; at various times one fraction might be more useful than another. • Every rational number can be written as a fraction. • Fractions can represent more than one whole. • Fractions can represent parts of a whole and parts of a set. • Fractions can be compared using a variety of visual models • Equivalent fractions can be represented in a variety of visual models (e.g. number line, area model, fraction bars/circles, pattern blocks). • The values of the numerator and denominator help you compare and reason about fractions. 	<p>Essential Questions: (Questions which frame ongoing and important inquiries about the big ideas. They are written for students and used in daily instruction to help engage students in meaningful thinking.)</p> <ul style="list-style-type: none"> • How do you know what the size of a fraction is? • How do I know my answer makes sense? • How can I use models to compare fractions? • How does equivalence help us solve problems? • How can I use language to explain my thinking about the size of fractions?
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<p align="center">Acquisition (*Mostly assessed through traditional summative assessments)</p>

Knowledge: Key basic concepts, facts, and key terms (written in phrases) students should be able to recall independently.

Students will know ...

- fractions with different denominators can still represent the same size.
- fractions hold a place on the number line.
- fractions can be compared by creating common denominators or numerators, or by comparing to a benchmark fraction.

Key Academic Vocabulary:

- Decompose
- Numerator
- Denominator
- Proper Fraction
- Improper Fraction
- Factor
- Reduce
- Simplify
- Simplify
- Unit Fraction
- Lowest Terms
- Lowest Common Denominator (LCD)

Skills: The discrete skills and process students should be able to use independently (Bloom's Level of Learning should be noted in parentheses.)

Students will be skilled at:

- recognizing and generating equivalent fractions. (understanding, evaluating)
- drawing and locating fractions on a number line. (applying, understanding)
- creating a visual model to justify the equivalence or comparison of two fractions. (evaluating)
- adding and subtracting fractions and mixed numbers with like denominators. (remembering)
- communicating appropriate mathematical language and notation including numerator, denominator, equivalent fraction, benchmark fraction, $>$, $<$ and $=$. (applying)